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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,515	09/17/2001	Hyung-Chul Choi	M0023/7000D	9063

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EXAMINER

HON, SOW FUN

ART UNIT

PAPER NUMBER

1772

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/954,515

Applicant(s)

CHOI ET AL.

Examiner

Sow-Fun Hon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/29/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/29/04 has been entered.

Response to Amendment

Withdrawn Rejections

2. The 35 U.S.C. 112, 2nd paragraph and 103(a) rejections in the Office action dated 09/22/2003 of claims 18-28 have been withdrawn due to the amendment filed 03/29/04.

New Rejections

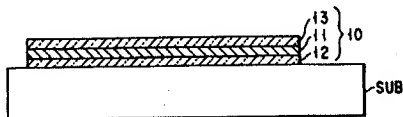
Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 18-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi et al. (US 5,667,853).

Regarding claim 18, Fukuyoshi et al. has an electrode assembly (multilayered conductive film) in Fig. 1 below comprising a substrate (SUB); a first transparent oxide layer 12 formed on the substrate; a silver-based metallic layer 11 formed on transparent oxide layer 12; and a second

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transparent layer 13 formed on the conductive layer 11 (column 4, lines 20-30). The silver layer 11 is conductive (column 5, lines 55-60). Layers 12 and 13 are high refractive index layers (column 12, lines 1-10). The conductive layer is patterned so as to divide the conductive layer into a plurality of discrete electrodes (note plural, column 13, lines 50-55).

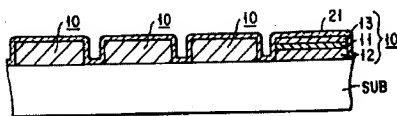


Regarding claim 19, Fukuyoshi et al. teaches a chip for driving the device formed overlying (on) a portion of the electrode (column 10, lines 25-35). Contacts which are conductors are needed to connect the electrodes to the chip. Thus it would have been obvious to one of ordinary skill in the art that there are a plurality of conductors connected to portions of the top layer overlying the discrete electrodes. Regarding claim 21, Fukuyoshi et al. teaches that the substrate is a synthetic resin (plastic) material (column 9, lines 40-50).

Regarding claim 23, Fukuyoshi et al. teaches that the conductive layer 11 comprises silver and gold (column 5, lines 45-55) which form an alloy.

Regarding claims 22, 24, Fukuyoshi et al. teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines 60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30).

Regarding claim 25, Fukuyoshi et al. teaches a coating layer 21 of silicon oxide (column 8, lines 40-41). Fig. 2 on the next page shows that it is disposed on at least one surface of the substrate SUB.



F I G. 2

Regarding claim 26, Fukuyoshi et al. teaches a liquid crystal display assembly comprising a liquid crystal material LC sandwiched (column 9, lines 49-50) between two electrode assemblies 42 and 34 in Fig. 3 (column 9, lines 35-40).

Regarding claim 27, although Fukuyoshi et al. fails to teach that the liquid crystal display screen (column 21, lines 20-25) is a touch screen-type, touch screen displays are notoriously well known in the art.

Regarding claim 18, Fukuyoshi et al. fails to teach that the indium tin oxide high index top layer 13 in Fig. 2 above has a conductivity ranging from about 100 ohms/square to about 400 ohms/square.

CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90 % (Film Properties section). An application is for electrodes (Introduction section).

Therefore it would have been the result of routine experimentation for one of ordinary skill in the art to have used indium tin oxide with a conductivity ranging from about 100 ohms/square to about 400 ohms/square as the indium tin oxide high index top layer of Fukuyoshi et al. in order to obtain a conductive electrode with high transmission in the visible light region.

Regarding claim 20, Fukuyoshi et al. fails to teach that the indium tin oxide high index layer adjacent the substrate is an electrically insulating layer.

CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90 % (Film Properties section). Use in electrodes is one application (Introduction section).

Fukuyoshi et al. teaches a set of electrodes 34 that are adjacent to the screen (observer)-side substrate 31 in Fig. 3 (column 9, lines 14-24). Therefore it would have been obvious to one of ordinary skill in the art to have made the high index indium tin oxide layer adjacent to the screen-side substrate 31 of Fukuyoshi et al. with as high a transmission in the visible light region as possible in order to provide the display with as high a visible display as possible, which lowers the conductivity of the layer as taught by CERAC. Furthermore, a layer next to the substrate with the potential of contacting the observer would need to be electrically insulating so as not to shock the observer.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi et al. as applied to claims 18-27 above, and further in view of Yatabe et al. (previously cited US 4,234,654).

Fukuyoshi et al. teaches that the substrate is a synthetic resin (plastic) material (column 9, lines 40-50), but fails to specify the species.

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Yatabe et al. teaches a conductive laminate used as a transparent electrode structure for a liquid crystal display (column 9, lines 20-30). The substrate material may be polycarbonate, or polyacrylate (acrylic resin) (column 7, lines 55-65).

Thus the claimed substrate materials are notoriously well known in the art as substrates for electrode assemblies. Therefore it would have been obvious to one of ordinary skill in the art to have used the claimed polycarbonate or polyacrylate as materials for the substrate of Fukuyoshi et al.

Response to Arguments

6. Applicant's arguments with respect to claims 18-28 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
Sow-Fun Hon
05/27/04

[Signature]
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1112 5/28/04